CLAIMS

1. Charged particle beam device, comprising

an emitter array (22) for emitting a plurality of charged particle beams (8);

a lens (12) for imaging the plurality of charged particle beams;

an electrode unit (14) for accelerating the plurality of charged particle beams;

a first control unit (11) and a second control unit (15) for controlling the potential differences between a first potential of the emitter array, a second potential of the electrode unit and a third potential of a specimen;

whereby the second potential is capable of accelerating the plurality of charged particle beams with respect to the first potential and

whereby the third potential is capable of decelerating the plurality of charged particle beams with respect to the second potential.

2. The charged particle beam device according to claim 1, whereby the third potential is capable of defining the charged particle beam energy on impingement of the plurality of charged particle beams on the specimen such that it corresponds to a potential of maximal 5 kV; and

whereby the second potential is capable of increasing the charged particle beam energy to an energy that is at least a factor of 5 higher than the energy corresponding to the third potential.

3. The charged particle beam device according to any of the preceding claims, further comprising;

an extraction member (24) for extracting the plurality of charged particle beams.

4. The charged particle beam device according to any of the preceding claims, further comprising;

an emitting angle defining member (26) for controlling the emitting angle of the plurality of charged particle beams.

5. The charged particle beam device according to any of the preceding claims, whereby the emitter array (22) is spaced from a specimen stage (18) by at least 10 mm, preferably by at least 50 mm.

6. The charged particle beam device according to any of the preceding claims, further comprising a further electrode unit (32) biased to a potential which is capable of increasing the charged particle beam energy with respect to the energy corresponding to the third potential by at least a factor of 5.

7. The charged particle beam device according to any of the preceding claims, whereby the lens for imaging the plurality of charged particle beams (8) comprises a unit for providing a homogenous magnetic field (12', 42), the unit for providing a homogenous magnetic field comprises at least one coil (44).

8. The charged particle beam device according to claim 6, whereby the unit for providing a homogenous magnetic field further comprises at least a second coil (46).

9. The charged particle beam device according to any of claims 6 or 7, whereby the unit for providing a homogenous magnetic field further comprises at least one pole piece (48).

10. The charged particle beam device according to any of the preceding claims, further comprising a deflection system for deflecting the plurality of charged particle beams (8).

11. The charged particle beam device according to claim 10, whereby the deflection system for deflecting the plurality of charged particle beams comprises a magnetic deflector (52) for deflecting the plurality of charged particle beams.

12. The charged particle beam device according to any of claims 10 to 11, whereby the deflection system for deflecting the plurality of charged particle beams comprises a plurality of electrostatic deflectors (54) for individually deflecting the charged particle beams.

13. The charged particle beam device according to any of claims 10 to 12, whereby the deflection system for deflecting the plurality of charged particle beams (8) comprises a electrostatic deflector for deflecting the plurality of charged particle beams.

14. The charged particle beam device according to any of the preceding claims, whereby the electrode unit (14) and/or the further electrode unit (32) is capable of providing a vacuum isolation.

15. The charged particle beam device according to claim 14, whereby the vacuum isolation is provided by a transparency ratio between the area of apertures and the area of solid material of smaller than 1:100, preferably smaller than 1:500, more preferably smaller than 1:10000.

16. The charged particle beam device according to any of the preceding claims, whereby the third potential is capable of defining the charged particle beam energy on impingement of the plurality of charged particle beams on the specimen such that it corresponds to a potential of maximal 1 kV.

17. The charged particle beam device according to any of the preceding claims, whereby the second potential is capable of increasing the charged particle beam energy to an energy that is at least a factor of 10 higher than the energy corresponding to the third potential.

18. The charged particle beam device according to any of claims 9 to 17, whereby the unit for providing a homogenous magnetic field further comprises a lower pole piece (48c, 49) which is movable with respect to the at least one pole piece (48).

19. The charged particle beam device according to any of the preceding claims, whereby the charged particle device is a minicolumn.

20. Method of imaging a plurality of charged particle beams comprising the following steps:

emitting the plurality of charged particle beams with an emitter array system;

focusing the plurality of charged particle beams on a specimen with a lens;

providing a first potential to the emitter array;

providing a second potential to an electrode unit such that the plurality of charged particle beams are accelerated;

providing a third potential to a specimen such that the plurality of charged particle beams are decelerated before impingement on the specimen.

21. Method according to claim 20, whereby the third potential is provided such that the plurality of charged particle beams impinge on the specimen with an energy corresponding to maximal 5 kV; and

whereby the second potential is provided such that the plurality of charged particle beams are accelerated to an energy at least a factor of 5 higher than the energy on impingement on the specimen.

22. Method according to any of claims 20 to 21 further comprising the following steps:

providing a first vacuum in a first region between the emitter array and the electrode unit;

providing a second vacuum in a second region between the electrode unit and the specimen;

whereby the pressure in the first vacuum is at least a factor of 10 lower than the pressure in the second vacuum.

23. Method according to any of claims 20 to 22 further comprising the following steps:

deflecting the plurality of charged particle beams.